



EM125015763US

1

SEQUENCE LISTING

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XU, JUN

<120> TARGETS FOR TUMOR GROWTH INHIBITION

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<140> 10/551,667

<141> 2006-07-18

<150> PCT/US04/010059

<151> 2004-04-01

<150> 60/458,948

<151> 2003-08-01

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&lt;212&gt; PRT

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<213> Homo sapiens

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cactgtggaa agacgtttca aaagccaagc cagttaacgc gacacattag gatacacaca 660
ggtgaaaggc cgttcaaata tagtgaatgt ggaaaggctt ttaaccagaa gggggcactg 720
cagaccaca tgatcaagca cacaggtgaa aaaccccatg cctgtgcctt ctgtcctgcc 780
gccttctctc agaaagggaa tcttcagtcg cacgtgcagc gagtccactc agaggtcaag 840
aatggtccta cctataactg tacagaatgt agttgtgtat ttaaaagtgt aggcagctta 900
aacacgcata tcagcaagat gcatatgggt gggccacaga attcaacaag ttctacagag 960
actgctcatg ttttaacggc cacacttttt cagacgttac ctcttcaaca gacggaagcc 1020
caagccacgt cggcctcaag ccagccgagc tcccaggcgg tgagcgacgt catccagcag 1080
ctcctggagc tctcagagcc ggcgcgggtg gagtcggggc agtccccgca gcctgggcag 1140
cagctgagca tcacagtggg catcaaccag gacattttac agcaagcctt agaaaacagt 1200
gggctgtctt caattccagc tgcagcacat cctaattgact cctgccatgc caagacctct 1260
gcaccacacg ctcaaaaacc agatgttttc agcgtttcaa atgagcagac ggacccccaca 1320
gacgcagagc aagaaaaaga acaggaaaag ccggagaaaac tggataaaaa aaaaaaaaaa 1380
agggccacat gtgctcgagc tgcaggtcgc ggccgctag 1419

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<210> 9

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
 oligonucleotide



<400> 9  
 aaccctgcc acaacggtgg t 21

<210> 10  
 <211> 21  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 10  
 aaccccgcc acaacggugg u 21

<210> 11  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 11  
 aaccactgtg agacgaaatg t 21

<210> 12  
 <211> 21  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 12  
 aaccacugug agacgaaaug u 21

<210> 13  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 13  
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<210> 14  
 <211> 21  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 14  
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<210> 15  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 15  
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<210> 16  
 <211> 21  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 16  
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<210> 17  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 17  
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<210> 18  
 <211> 21  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 18  
 aaugcggaga acacuaauua u 21

<210> 19  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 19  
 aatgacaagc cacatcgatg t 21

<210> 20  
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 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 20  
 aaugacaagc cacaucgaug u 21

<210> 21  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 21  
 aagctggaca ttccctctgc g 21

<210> 22  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 22  
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<210> 23  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
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<400> 23  
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21

<210> 24  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
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<400> 24  
 aatctgatga tgaagctgca g

21

<210> 25  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 25  
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21

<210> 26  
 <211> 21  
 <212> DNA  
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<220>

<223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 26  
 aagctggaca ttccctctgc g

21

<210> 27  
 <211> 152  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 27

Ala Leu Arg Asn Trp Gln Val Tyr Arg Leu Val Thr Tyr Ile Phe Val  
 1 5 10 15

Tyr Glu Asn Pro Ile Ser Leu Leu Cys Gly Ala Ile Ile Ile Trp Arg  
 20 25 30

Phe Ala Gly Asn Phe Glu Arg Thr Val Gly Thr Val Arg His Cys Phe  
 35 40 45

Phe Thr Val Ile Phe Ala Ile Phe Ser Ala Ile Ile Phe Leu Ser Phe  
 50 55 60

Glu Ala Val Ser Ser Leu Ser Lys Leu Gly Glu Val Glu Asp Ala Arg  
 65 70 75 80

Gly Phe Thr Pro Val Ala Phe Ala Met Leu Gly Val Thr Thr Val Arg  
 85 90 95

Ser Arg Met Arg Arg Ala Leu Val Phe Gly Met Val Val Pro Ser Val  
 100 105 110

Leu Val Pro Trp Leu Leu Leu Gly Ala Ser Trp Leu Ile Pro Gln Thr  
 115 120 125

Ser Phe Leu Ser Asn Val Cys Gly Leu Ser Ile Gly Leu Ala Tyr Ala  
 130 135 140

His Leu Leu Leu Phe His Arg Pro  
 145 150

&lt;210&gt; 28

&lt;211&gt; 152

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 28

Leu Leu Gln Lys Arg Gln Leu Tyr Glu Ile Ile Thr Tyr Val Thr Leu  
 1 5 10 15

His Leu Ser Met Leu His Ile Val Phe Asn Phe Val Ser Leu Leu Pro  
 20 25 30

Ala Met Ser Gln Phe Glu Lys Lys Gln Gly Thr Leu Ala Cys Ile Leu  
 35 40 45

Val Thr Val Ile Pro Tyr Thr Leu Phe Pro Gly Ile Met His Leu Ile  
 50 55 60

Val Tyr His Phe Phe Leu Arg Lys Asp Tyr Val Ser Ile Ala Gly Leu  
 65 70 75 80

Ser Gly Trp Ala Phe Ala Phe Ile Ser Ala Ser Cys Val His Ser Pro  
 85 90 95

Gln Arg Leu Ile Ser Phe Phe Asn Leu Phe Ser Ile Pro Ala Tyr Cys  
 100 105 110

Phe Pro Ile Ile Tyr Leu Ile Met Thr Thr Ile Leu Val Pro Lys Ala  
 115 120 125

Ser Phe Ile Gly His Ala Ser Gly Ala Val Met Gly Tyr Cys Thr Pro  
 130 135 140

Phe Met Leu Gly Ser Ile Pro Leu  
 145 150

<210> 29  
 <211> 145  
 <212> PRT  
 <213> Schizosaccharomyces pombe

<400> 29  
 Pro Arg Ser Leu Glu Gly Leu Arg Gly Ile Val Phe Ala Pro Phe Leu  
 1 5 10 15

His Ala Asp Phe Gly His Leu Ile Ala Asn Ser Val Pro Phe Val Val  
 20 25 30

Leu Ala Trp Leu Val Met Leu Gln Glu Val Ser Asp Phe Trp Ile Val  
 35 40 45

Thr Ile Ile Thr Met Val Val Gly Gly Leu Gly Val Trp Leu Ile Ala  
 50 55 60

Pro Pro Asn Thr Val Thr Val Gly Ala Ser Ile Leu Ile Phe Gly Tyr  
 65 70 75 80

Leu Gly Phe Leu Leu Phe Arg Gly Trp Phe Gln Lys Asn Leu Ala Ser  
 85 90 95

Ile Val Leu Ser Ile Val Val Leu Val Leu Tyr Gly Ser Ala Leu Trp  
 100 105 110

Gly Leu Leu Pro Gly Arg Ala Gly Val Ser Trp Gln Gly His Leu Phe  
 115 120 125

Gly Phe Ile Gly Gly Ala Ile Ala Ala Trp Leu Ile Ala Arg Glu Lys  
 130 135 140

His  
 145

<210> 30  
 <211> 145  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 30  
 Ser Lys Ser Asn Ala Arg Pro Val Val Ala Ile Gly Asp Ser Asp Ile  
 1 5 10 15

Tyr Ser Tyr Arg Leu Trp Ser Phe Phe Cys Gln Trp Ile Asn Thr Ile  
                     20                                    25                                    30  
 Phe Cys Trp Ser Asn Arg Arg Arg Pro Leu Gly Leu Thr Pro Phe Leu  
                     35                                    40                                    45  
 Leu Leu Tyr Val Leu Ser Gly Val Met Gly Asn Ala Phe Thr Phe Trp  
                     50                                    55                                    60  
 Leu Thr Pro Glu Thr Val Ala Ala Gly Ala Ser Thr Ser Leu Phe Gly  
                     65                                    70                                    75                                    80  
 Leu Phe Ala Ala Ile Val Val Leu Ser Phe Leu Gly Lys Asn Gln Ala  
                                     85                                    90                                    95  
 Leu Lys Asp Leu Gly Lys Ser Tyr Gln Thr Leu Ile Val Val Asn Leu  
                     100                                    105                                    110  
 Leu Met Asn Leu Phe Met Pro Asn Val Ser Met Ala Gly His Ile Gly  
                     115                                    120                                    125  
 Gly Val Val Gly Gly Ala Leu Leu Ser Ile Val Phe Pro Thr Lys Met  
                     130                                    135                                    140  
 Arg  
 145

<210> 31  
 <211> 156  
 <212> PRT  
 <213> Homo sapiens

<400> 31  
 Pro Glu Lys Arg Glu Glu Ala Trp Arg Phe Ile Ser Tyr Met Leu Val  
                     1                                    5                                    10                                    15  
 His Ala Gly Val Gln His Ile Leu Gly Asn Leu Cys Met Gln Leu Val  
                                     20                                    25                                    30  
 Leu Gly Ile Pro Leu Glu Met Val His Lys Gly Leu Arg Val Gly Leu  
                     35                                    40                                    45  
 Val Tyr Leu Ala Gly Val Ile Ala Gly Ser Leu Ala Ser Ser Ile Phe  
                     50                                    55                                    60  
 Asp Pro Leu Arg Tyr Leu Val Gly Ala Ser Gly Gly Val Tyr Ala Leu  
                     65                                    70                                    75                                    80  
 Met Gly Gly Tyr Phe Met Asn Val Leu Val Asn Phe Gln Glu Met Ile  
                                     85                                    90                                    95  
 Pro Ala Phe Gly Ile Phe Arg Leu Leu Ile Ile Ile Leu Ile Ile Val  
                     100                                    105                                    110  
 Leu Asp Met Gly Phe Ala Leu Tyr Arg Arg Phe Phe Val Pro Glu Asp  
                     115                                    120                                    125

Gly Ser Pro Val Ser Phe Ala Ala His Ile Ala Gly Gly Phe Ala Gly  
 130 135 140

Met Ser Ile Gly Tyr Thr Val Phe Ser Cys Phe Asp  
 145 150 155

<210> 32  
 <211> 145  
 <212> PRT  
 <213> Escherichia coli

<400> 32  
 Pro Thr Leu Lys Phe Glu Phe Trp Arg Tyr Phe Thr His Ala Leu Met  
 1 5 10 15

His Phe Ser Leu Met His Ile Leu Phe Asn Leu Leu Trp Trp Trp Tyr  
 20 25 30

Leu Gly Gly Ala Val Glu Lys Arg Leu Gly Ser Gly Lys Leu Ile Val  
 35 40 45

Ile Arg Ser Ile Ser Ala Leu Leu Ser Gly Tyr Val Gln Gln Lys Phe  
 50 55 60

Ser Gly Pro Trp Phe Gly Gly Leu Ser Gly Val Val Tyr Ala Leu Met  
 65 70 75 80

Gly Tyr Val Trp Leu Arg Gly Glu Arg Asp Pro Gln Ser Gly Ile Tyr  
 85 90 95

Leu Gln Arg Gly Leu Ile Ile Phe Ala Leu Ile Trp Ile Val Ala Gly  
 100 105 110

Trp Phe Asp Leu Phe Gly Met Ser Met Ala Asn Gly Ala His Ile Ala  
 115 120 125

Gly Leu Ala Val Gly Leu Ala Met Ala Phe Val Asp Ser Leu Asn Ala  
 130 135 140

Arg  
 145

<210> 33  
 <211> 157  
 <212> PRT  
 <213> Homo sapiens

<400> 33  
 Ser Asn Pro Ala Ser Lys Val Leu Cys Ser Pro Met Leu Leu Ser Thr  
 1 5 10 15

Phe Ser His Phe Ser Leu Phe His Met Ala Ala Asn Met Tyr Val Leu  
 20 25 30



Trp	Ser	Phe	Ser	Ser	Ser	Ile	Val	Asn	Ile	Leu	Gly	Gln	Glu	Gln	Phe
		35					40					45			
Met	Ala	Val	Tyr	Leu	Ser	Ala	Gly	Val	Ile	Ser	Asn	Phe	Val	Ser	Tyr
	50					55					60				
Leu	Gly	Lys	Val	Ala	Thr	Gly	Arg	Tyr	Gly	Pro	Ser	Leu	Gly	Ala	Ser
65					70					75					80
Gly	Ala	Ile	Met	Thr	Val	Leu	Ala	Ala	Val	Cys	Thr	Lys	Ile	Pro	Glu
				85					90					95	
Gly	Arg	Leu	Ala	Ile	Ile	Phe	Leu	Pro	Met	Phe	Thr	Phe	Thr	Ala	Gly
			100					105					110		
Asn	Ala	Leu	Lys	Ala	Ile	Ile	Ala	Met	Asp	Thr	Ala	Gly	Met	Ile	Leu
		115					120					125			
Gly	Trp	Lys	Phe	Phe	Asp	His	Ala	Ala	His	Leu	Gly	Gly	Ala	Leu	Phe
	130					135					140				
Gly	Ile	Trp	Tyr	Val	Thr	Tyr	Gly	His	Glu	Leu	Ile	Trp			
145					150					155					

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<210> 34
<211> 142
<212> PRT
<213> Sulfolobus solfataricus
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<400> 34															
Tyr	Leu	Val	Ile	Lys	Gly	Tyr	Tyr	Ser	Glu	Leu	Phe	Thr	Ser	Ile	Phe
1				5					10					15	
Ile	Thr	Asn	Ser	Phe	Val	Asp	Phe	Ile	Phe	Asn	Phe	Ile	Ser	Leu	Tyr
			20					25					30		
Val	Ile	Tyr	Leu	Ile	Phe	Gly	Ser	Arg	Ala	Gly	Lys	His	Glu	Tyr	Gly
		35					40					45			
Ile	Phe	Ile	Leu	Ala	Gly	Ile	Leu	Gly	Asn	Leu	Leu	Thr	Val	Ile	Phe
	50					55					60				
Tyr	Ser	Pro	Phe	Thr	Leu	Ser	Ser	Gly	Ala	Ser	Gly	Gly	Ile	Phe	Gly
65					70					75					80
Leu	Leu	Ser	Tyr	Tyr	Thr	Phe	Tyr	Asp	Phe	Leu	Lys	Lys	Asp	Asn	Leu
				85					90					95	
Gly	Val	Tyr	Gly	Leu	Val	Phe	Leu	Val	Ser	Val	Phe	Gly	Val	Ser	Asp
			100					105					110		
Leu	Ile	Phe	Pro	Asn	Val	Asn	Val	Val	Ala	His	Ile	Gly	Gly	Ile	Leu
		115					120					125			
Gly	Gly	Ile	Met	Tyr	Ala	Val	Val	Tyr	Tyr	Leu	Ile	Arg	Ser		
	130					135					140				

<210> 35  
 <211> 156  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 35  
 Ile Phe Lys His Lys Asp Leu Lys Arg Leu Phe Leu Ser Ala Phe Tyr  
   1                  5                  10                  15  
 His Val Asn Glu Pro His Leu Val Tyr Asn Met Met Ser Leu Leu Trp  
                   20                  25                  30  
 Lys Gly Ile Lys Leu Glu Thr Ser Met Gly Ser Ser Glu Phe Ala Ser  
           35                  40                  45  
 Met Val Phe Thr Leu Ile Gly Met Ser Gln Gly Val Thr Leu Leu Leu  
       50                  55                  60  
 Ala Lys Ser Leu Leu Leu Leu Phe Asp Tyr Asp Arg Ala Tyr Tyr Asn  
   65                  70                  75                  80  
 Glu Tyr Ala Val Gly Phe Ser Gly Val Leu Phe Ala Met Lys Val Val  
                   85                  90                  95  
 Leu Asn Ser Gln Ala Glu Asp Tyr Ser Ser Val Tyr Gly Ile Leu Val  
           100                  105                  110  
 Pro Thr Lys Tyr Ala Ala Trp Ala Glu Leu Ile Leu Val Gln Met Phe  
       115                  120                  125  
 Val Pro Asn Ala Ser Phe Leu Gly His Leu Gly Gly Ile Leu Ala Gly  
   130                  135                  140  
 Ile Ile Tyr Leu Lys Leu Lys Gly Ser Tyr Ser Gly  
 145                  150                  155

<210> 36  
 <211> 10  
 <212> DNA  
 <213> Homo sapiens

<400> 36  
 tggccaataa

10

<210> 37  
 <211> 854  
 <212> PRT  
 <213> Homo sapiens

<400> 37  
 Met Ser Glu Ala Arg Arg Asp Ser Thr Ser Ser Leu Gln Arg Lys Lys  
   1                  5                  10                  15  
 Pro Pro Trp Leu Lys Leu Asp Ile Pro Ser Ala Val Pro Leu Thr Ala  
       20                  25                  30

Glu	Glu	Pro	Ser	Phe	Leu	Gln	Pro	Leu	Arg	Arg	Gln	Ala	Phe	Leu	Arg
		35					40					45			
Ser	Val	Ser	Met	Pro	Ala	Glu	Thr	Ala	His	Ile	Ser	Ser	Pro	His	His
	50					55					60				
Glu	Leu	Arg	Arg	Pro	Val	Leu	Gln	Arg	Gln	Thr	Ser	Ile	Thr	Gln	Thr
65					70					75					80
Ile	Arg	Arg	Gly	Thr	Ala	Asp	Trp	Phe	Gly	Val	Ser	Lys	Asp	Ser	Asp
				85					90					95	
Ser	Thr	Gln	Lys	Trp	Gln	Arg	Lys	Ser	Ile	Arg	His	Cys	Ser	Gln	Arg
			100					105					110		
Tyr	Gly	Lys	Leu	Lys	Pro	Gln	Val	Leu	Arg	Glu	Leu	Asp	Leu	Pro	Ser
		115					120					125			
Gln	Asp	Asn	Val	Ser	Leu	Thr	Ser	Thr	Glu	Thr	Pro	Pro	Pro	Leu	Tyr
	130					135					140				
Val	Gly	Pro	Cys	Gln	Leu	Gly	Met	Gln	Lys	Ile	Ile	Asp	Pro	Leu	Ala
145					150					155					160
Arg	Gly	Arg	Ala	Phe	Arg	Val	Ala	Asp	Asp	Thr	Ala	Glu	Gly	Leu	Ser
				165					170					175	
Ala	Pro	His	Thr	Pro	Val	Thr	Pro	Gly	Ala	Ala	Ser	Leu	Cys	Ser	Phe
			180					185					190		
Ser	Ser	Ser	Arg	Ser	Gly	Phe	His	Arg	Leu	Pro	Arg	Arg	Arg	Lys	Arg
		195					200					205			
Glu	Ser	Val	Ala	Lys	Met	Ser	Phe	Arg	Ala	Ala	Ala	Ala	Leu	Met	Lys
	210					215					220				
Gly	Arg	Ser	Val	Arg	Asp	Gly	Thr	Phe	Arg	Arg	Ala	Arg	Arg	Ser	Phe
225					230					235					240
Thr	Pro	Ala	Ser	Phe	Leu	Glu	Glu	Asp	Thr	Thr	Asp	Phe	Pro	Asp	Glu
				245					250					255	
Leu	Asp	Thr	Ser	Phe	Phe	Ala	Arg	Glu	Gly	Ile	Leu	His	Glu	Glu	Leu
			260					265					270		
Ser	Thr	Tyr	Pro	Asp	Glu	Val	Phe	Glu	Ser	Pro	Ser	Glu	Ala	Ala	Leu
		275					280					285			
Lys	Asp	Trp	Glu	Lys	Ala	Pro	Glu	Gln	Ala	Asp	Leu	Thr	Gly	Gly	Ala
	290					295					300				
Leu	Asp	Arg	Ser	Glu	Leu	Glu	Arg	Ser	His	Leu	Met	Leu	Pro	Leu	Glu
305					310					315					320
Arg	Gly	Trp	Arg	Lys	Gln	Lys	Glu	Gly	Ala	Ala	Ala	Pro	Gln	Pro	Lys
				325					330					335	

Val	Arg	Leu	Arg 340	Gln	Glu	Val	Val	Ser 345	Thr	Ala	Gly	Pro	Arg 350	Arg	Gly
Gln	Arg	Ile 355	Ala	Val	Pro	Val	Arg 360	Lys	Leu	Phe	Ala	Arg 365	Glu	Lys	Arg
Pro	Tyr	Gly 370	Leu	Gly	Met	Val 375	Gly	Arg	Leu	Thr	Asn 380	Arg	Thr	Tyr	Arg
Lys 385	Arg	Ile	Asp	Ser	Phe 390	Val	Lys	Arg	Gln	Ile 395	Glu	Asp	Met	Asp	Asp 400
His	Arg	Pro	Phe	Phe 405	Thr	Tyr	Trp	Leu	Thr 410	Phe	Val	His	Ser	Leu 415	Val
Thr	Ile	Leu	Ala 420	Val	Cys	Ile	Tyr	Gly 425	Ile	Ala	Pro	Val	Gly 430	Phe	Ser
Gln	His	Glu 435	Thr	Val	Asp	Ser	Val 440	Leu	Arg	Asn	Arg	Gly 445	Val	Tyr	Glu
Asn	Val 450	Lys	Tyr	Val	Gln	Gln 455	Glu	Asn	Phe	Trp	Ile 460	Gly	Pro	Ser	Ser
Glu 465	Ala	Leu	Ile	His	Leu 470	Gly	Ala	Lys	Phe	Ser 475	Pro	Cys	Met	Arg	Gln 480
Asp	Pro	Gln	Val	His 485	Ser	Phe	Ile	Arg	Ser 490	Ala	Arg	Glu	Arg	Glu 495	Lys
His	Ser	Ala	Cys 500	Cys	Val	Arg	Asn 505	Asp	Arg	Ser	Gly	Cys	Val 510	Gln	Thr
Ser	Glu	Glu 515	Glu	Cys	Ser	Ser	Thr 520	Leu	Ala	Val	Trp	Val 525	Lys	Trp	Pro
Ile	His 530	Pro	Ser	Ala	Pro	Glu 535	Leu	Ala	Gly	His	Lys 540	Arg	Gln	Phe	Gly
Ser 545	Val	Cys	His	Gln	Asp 550	Pro	Arg	Val	Cys	Asp 555	Glu	Pro	Ser	Ser	Glu 560
Asp	Pro	His	Glu	Trp 565	Pro	Glu	Asp	Ile	Thr 570	Lys	Trp	Pro	Ile	Cys 575	Thr
Lys	Asn	Ser	Ala 580	Gly	Asn	His	Thr 585	Asn	His	Pro	His	Met 590	Asp	Cys	Val
Ile	Thr	Gly 595	Arg	Pro	Cys	Cys	Ile 600	Gly	Thr	Lys	Gly	Arg 605	Cys	Glu	Ile
Thr	Ser 610	Arg	Glu	Tyr	Cys	Asp 615	Phe	Met	Arg	Gly	Tyr 620	Phe	His	Glu	Glu
Ala 625	Thr	Leu	Cys	Ser	Gln 630	Val	His	Cys	Met	Asp 635	Asp	Val	Cys	Gly	Leu 640

<213> Homo sapiens

Lys Val His Arg Ile Val Ser Lys Trp Met Leu Pro Glu Lys Ser Arg  
35 40 45

[illegible]

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<210> 39
<211> 619
<212> PRT
<213> Homo sapiens
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<400> 39
Met Ser Val Ala His Met Ser Leu Gln Ala Ala Ala Ala Leu Leu Lys
  1             5             10             15
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Gly	Arg	Ser	Val	Leu	Asp	Ala	Thr	Gly	Gln	Arg	Cys	Arg	Val	Val	Lys	20	25	30
Arg	Ser	Phe	Ala	Phe	Pro	Ser	Phe	Leu	Glu	Glu	Asp	Val	Val	Asp	Gly	35	40	45
Ala	Asp	Thr	Phe	Asp	Ser	Ser	Phe	Phe	Ser	Lys	Glu	Glu	Met	Ser	Ser	50	55	60
Met	Pro	Asp	Asp	Val	Phe	Glu	Ser	Pro	Pro	Leu	Ser	Ala	Ser	Tyr	Phe	65	70	75
Arg	Gly	Ile	Pro	His	Ser	Ala	Ser	Pro	Val	Ser	Pro	Asp	Gly	Val	Gln	85	90	95
Ile	Pro	Leu	Lys	Glu	Tyr	Gly	Arg	Ala	Pro	Val	Pro	Gly	Pro	Arg	Arg	100	105	110
Gly	Lys	Arg	Ile	Ala	Ser	Lys	Val	Lys	His	Phe	Ala	Phe	Asp	Arg	Lys	115	120	125
Lys	Arg	His	Tyr	Gly	Leu	Gly	Val	Val	Gly	Asn	Trp	Leu	Asn	Arg	Ser	130	135	140
Tyr	Arg	Arg	Ser	Ile	Ser	Ser	Thr	Val	Gln	Arg	Gln	Leu	Glu	Ser	Phe	145	150	155
Asp	Ser	His	Arg	Pro	Tyr	Phe	Thr	Tyr	Trp	Leu	Thr	Phe	Val	His	Val	165	170	175
Ile	Ile	Thr	Leu	Leu	Val	Ile	Cys	Thr	Tyr	Gly	Ile	Ala	Pro	Val	Gly	180	185	190
Phe	Ala	Gln	His	Val	Thr	Thr	Gln	Leu	Val	Leu	Arg	Asn	Lys	Gly	Val	195	200	205
Tyr	Glu	Ser	Val	Lys	Tyr	Ile	Gln	Gln	Glu	Asn	Phe	Trp	Val	Gly	Pro	210	215	220
Ser	Ser	Ile	Asp	Leu	Ile	His	Leu	Gly	Ala	Lys	Phe	Ser	Pro	Cys	Ile	225	230	235
Arg	Lys	Asp	Gly	Gln	Ile	Glu	Gln	Leu	Val	Leu	Arg	Glu	Arg	Asp	Leu	245	250	255
Glu	Arg	Asp	Ser	Gly	Cys	Cys	Val	Gln	Asn	Asp	His	Ser	Gly	Cys	Ile	260	265	270
Gln	Thr	Gln	Arg	Lys	Asp	Cys	Ser	Glu	Thr	Leu	Ala	Thr	Phe	Val	Lys	275	280	285
Trp	Gln	Asp	Asp	Thr	Gly	Pro	Pro	Met	Asp	Lys	Ser	Asp	Leu	Gly	Gln	290	295	300
Lys	Arg	Thr	Ser	Gly	Ala	Val	Cys	His	Gln	Asp	Pro	Arg	Thr	Cys	Glu	305	310	315

Glu Pro Ala Ser Ser Gly Ala His Ile Trp Pro Asp Asp Ile Thr Lys  
 325 330 335  
 Trp Pro Ile Cys Thr Glu Gln Ala Arg Ser Asn His Thr Gly Phe Leu  
 340 345 350  
 His Met Asp Cys Glu Ile Lys Gly Arg Pro Cys Cys Ile Gly Thr Lys  
 355 360 365  
 Gly Ser Cys Glu Ile Thr Thr Arg Glu Tyr Cys Glu Phe Met His Gly  
 370 375 380  
 Tyr Phe His Glu Glu Ala Thr Leu Cys Ser Gln Val His Cys Leu Asp  
 385 390 395 400  
 Lys Val Cys Gly Leu Leu Pro Phe Leu Asn Pro Glu Val Pro Asp Gln  
 405 410 415  
 Phe Tyr Arg Leu Trp Leu Ser Leu Phe Leu His Ala Gly Val Val His  
 420 425 430  
 Cys Leu Val Ser Val Val Phe Gln Met Thr Ile Leu Arg Asp Leu Glu  
 435 440 445  
 Lys Leu Ala Gly Trp His Arg Ile Ala Ile Ile Phe Ile Leu Ser Gly  
 450 455 460  
 Ile Thr Gly Asn Leu Ala Ser Ala Ile Phe Leu Pro Tyr Arg Ala Glu  
 465 470 475 480  
 Val Gly Pro Ala Gly Ser Gln Phe Gly Leu Leu Ala Cys Leu Phe Val  
 485 490 495  
 Glu Leu Phe Gln Ser Trp Pro Leu Leu Glu Arg Pro Trp Lys Ala Phe  
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 Pro Trp Ile Asp Asn Ile Ala His Ile Phe Gly Phe Leu Ser Gly Leu  
 530 535 540  
 Leu Leu Ala Phe Ala Phe Leu Pro Tyr Ile Thr Phe Gly Thr Ser Asp  
 545 550 555 560  
 Lys Tyr Arg Lys Arg Ala Leu Ile Leu Val Ser Leu Leu Ala Phe Ala  
 565 570 575  
 Gly Leu Phe Ala Ala Leu Val Leu Trp Leu Tyr Ile Tyr Pro Ile Asn  
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 595 600 605  
 Cys Glu Lys Tyr Glu Leu Asp Gln Val Leu His  
 610 615



<210> 40  
 <211> 404  
 <212> PRT  
 <213> Homo sapiens

<400> 40  
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                   20                  25                  30  
 Ala Ala Pro Glu Asp His Trp Lys Val Leu Phe Asp Gln Phe Asp Pro  
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 Gly Asn Thr Gly Tyr Ile Ser Thr Gly Lys Phe Arg Ser Leu Leu Glu  
                   50                  55                  60  
 Ser His Ser Ser Lys Leu Asp Pro His Lys Arg Glu Val Leu Leu Ala  
   65                  70                  75                  80  
 Leu Ala Asp Ser His Ala Asp Gly Gln Ile Gly Tyr Gln Asp Phe Val  
                   85                  90                  95  
 Ser Leu Met Ser Asn Lys Arg Ser Asn Ser Phe Arg Gln Ala Ile Leu  
                   100                  105                  110  
 Gln Gly Asn Arg Arg Leu Ser Ser Lys Ala Leu Leu Glu Glu Lys Gly  
                   115                  120                  125  
 Leu Ser Leu Ser Gln Arg Leu Ile Arg His Val Ala Tyr Glu Thr Leu  
   130                  135                  140  
 Pro Arg Glu Ile Asp Arg Lys Trp Tyr Tyr Asp Ser Tyr Thr Cys Cys  
 145                  150                  155                  160  
 Pro Pro Pro Trp Phe Met Ile Thr Val Thr Leu Leu Glu Val Ala Phe  
                   165                  170                  175  
 Phe Leu Tyr Asn Gly Val Ser Leu Gly Gln Phe Val Leu Gln Val Thr  
                   180                  185                  190  
 His Pro Arg Tyr Leu Lys Asn Ser Leu Val Tyr His Pro Gln Leu Arg  
                   195                  200                  205  
 Ala Gln Val Trp Arg Tyr Leu Thr Tyr Ile Phe Met His Ala Gly Ile  
   210                  215                  220  
 Glu His Leu Gly Leu Asn Val Val Leu Gln Leu Leu Val Gly Val Pro  
 225                  230                  235                  240  
 Leu Glu Met Val His Gly Ala Thr Arg Ile Gly Leu Val Tyr Val Ala  
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 Gly Val Val Ala Gly Ser Leu Ala Val Ser Val Ala Asp Met Thr Ala  
                   260                  265                  270

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<210> 41
<211> 379
<212> PRT
<213> Homo sapiens
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Trp  Gly  Ala  Ser  Val  Gly  Gly  Arg  Ser  Cys  Glu  Glu  Leu  Thr  Ala  Val
      20          25          30

Leu  Thr  Pro  Pro  Gln  Leu  Leu  Gly  Arg  Arg  Phe  Asn  Phe  Phe  Ile  Gln
      35          40          45

Gln  Lys  Cys  Gly  Phe  Arg  Lys  Ala  Pro  Arg  Lys  Val  Glu  Pro  Arg  Arg
      50          55          60

Ser  Asp  Pro  Gly  Thr  Ser  Gly  Glu  Ala  Tyr  Lys  Arg  Ser  Ala  Leu  Ile
  65          70          75          80

Pro  Pro  Val  Glu  Glu  Thr  Val  Phe  Tyr  Pro  Ser  Pro  Tyr  Pro  Ile  Arg
      85          90          95

Ser  Leu  Ile  Lys  Pro  Leu  Phe  Phe  Thr  Val  Gly  Phe  Thr  Gly  Cys  Ala
      100          105          110

Phe  Gly  Ser  Ala  Ala  Ile  Trp  Gln  Tyr  Glu  Ser  Leu  Lys  Ser  Arg  Val
      115          120          125

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Gln Ser Tyr Phe Asp Gly Ile Lys Ala Asp Trp Leu Asp Ser Ile Arg  
 130 135 140  
 Pro Gln Lys Glu Gly Asp Phe Arg Lys Glu Ile Asn Lys Trp Trp Asn  
 145 150 155 160  
 Asn Leu Ser Asp Gly Gln Arg Thr Val Thr Gly Ile Ile Ala Ala Asn  
 165 170 175  
 Val Leu Val Phe Cys Leu Trp Arg Val Pro Ser Leu Gln Arg Thr Met  
 180 185 190  
 Ile Arg Tyr Phe Thr Ser Asn Pro Ala Ser Lys Val Leu Cys Ser Pro  
 195 200 205  
 Met Leu Leu Ser Thr Phe Ser His Phe Ser Leu Phe His Met Ala Ala  
 210 215 220  
 Asn Met Tyr Val Leu Trp Ser Phe Ser Ser Ser Ile Val Asn Ile Leu  
 225 230 235 240  
 Gly Gln Glu Gln Phe Met Ala Val Tyr Leu Ser Ala Gly Val Ile Ser  
 245 250 255  
 Asn Phe Val Ser Tyr Leu Gly Lys Val Ala Thr Gly Arg Tyr Gly Pro  
 260 265 270  
 Ser Leu Gly Ala Ser Gly Ala Ile Met Thr Val Leu Ala Ala Val Cys  
 275 280 285  
 Thr Lys Ile Pro Glu Gly Arg Leu Ala Ile Ile Phe Leu Pro Met Phe  
 290 295 300  
 Thr Phe Thr Ala Gly Asn Ala Leu Lys Ala Ile Ile Ala Met Asp Thr  
 305 310 315 320  
 Ala Gly Met Ile Leu Gly Trp Lys Phe Phe Asp His Ala Ala His Leu  
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 Gly Gly Ala Leu Phe Gly Ile Trp Tyr Val Thr Tyr Gly His Glu Leu  
 340 345 350  
 Ile Trp Lys Asn Arg Glu Pro Leu Val Lys Ile Trp His Glu Ile Arg  
 355 360 365  
 Thr Asn Gly Pro Lys Lys Gly Gly Gly Ser Lys  
 370 375

<210> 42  
 <211> 315  
 <212> PRT  
 <213> Homo sapiens

<400> 42  
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Ala	Thr	Leu 35	Ala	Leu	Asn	Ile	Trp 40	Phe	Phe	Leu	Asn	Pro 45	Gln	Lys	Pro
Leu	Tyr 50	Ser	Ser	Cys	Leu	Ser 55	Val	Glu	Lys	Cys	Tyr 60	Gln	Gln	Lys	Asp
Trp 65	Gln	Arg	Leu	Leu	Leu 70	Ser	Pro	Leu	His	His 75	Ala	Asp	Asp	Trp	His 80
Leu	Tyr	Phe	Asn	Met 85	Ala	Ser	Met	Leu	Trp 90	Lys	Gly	Ile	Asn	Leu 95	Glu
Arg	Arg	Leu	Gly 100	Ser	Arg	Trp	Phe	Ala 105	Tyr	Val	Ile	Thr	Ala 110	Phe	Ser
Val	Leu	Thr 115	Gly	Val	Val	Tyr	Leu 120	Leu	Leu	Gln	Phe	Ala 125	Val	Ala	Glu
Phe 130	Met	Asp	Glu	Pro	Asp	Phe 135	Lys	Arg	Ser	Cys	Ala 140	Val	Gly	Phe	Ser
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Pro	Leu	Lys	Lys	Ile	Met	Glu 215	Ala	Cys	Ala	Gly	Gly 220	Phe	Ser	Ser	Ser
Val 225	Gly	Tyr	Pro	Gly	Arg 230	Gln	Tyr	Tyr	Phe	Asn 235	Ser	Ser	Gly	Ser	Ser 240
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Arg	Asn 290	Ser	Pro	Pro	Pro	Tyr 295	Gly	Phe	His	Leu	Ser 300	Pro	Glu	Glu	Met
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<210> 51  
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 <213> Artificial Sequence

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<210> 54  
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 <212> DNA  
 <213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic primer

&lt;400&gt; 54

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28

&lt;210&gt; 55

&lt;211&gt; 26

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic primer

&lt;400&gt; 55

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26

&lt;210&gt; 56

&lt;211&gt; 29

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

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&lt;223&gt; Description of Artificial Sequence: Synthetic primer

&lt;400&gt; 56

ccggcgtcga ctcagtggag ctgagcgtc

29

&lt;210&gt; 57

&lt;211&gt; 26

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic primer

&lt;400&gt; 57

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26

&lt;210&gt; 58

&lt;211&gt; 6559

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 58

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&lt;210&gt; 66

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<213> Artificial Sequence

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&lt;211&gt; 4736

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 69

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<210> 71

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oligonucleotide

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<223> Description of Artificial Sequence: Synthetic peptide

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<210> 77

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 77

Val Leu Gly Leu Cys Cys Val Leu Leu  
1 5

<210> 78

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 78

Leu Leu His Val Thr Asp Thr Gly Val  
1 5

<210> 79

<211> 9

<212> PRT

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<400> 79

Ser Glu Leu Ile Gly Gln Phe Gly Val  
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<210> 80

<211> 30

<212> PRT

<213> Artificial Sequence

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&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 80

Ala	Asp	Asp	Glu	Val	Asp	Val	Asp	Gly	Thr	Val	Glu	Glu	Asp	Leu	Gly
1				5					10					15	
Lys	Ser	Arg	Glu	Gly	Ser	Arg	Thr	Asp	Asp	Glu	Val	Val	Gln		
			20					25					30		

&lt;210&gt; 81

&lt;211&gt; 30

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 81

Ser	Ala	Phe	Leu	Val	Ala	Asp	Lys	Val	Ile	Val	Thr	Ser	Lys	His	Asn
1				5					10					15	
Asn	Asp	Thr	Gln	His	Ile	Trp	Glu	Ser	Asp	Ser	Asn	Glu	Phe		
			20					25					30		

&lt;210&gt; 82

&lt;211&gt; 30

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 82

Ser	Glu	Lys	Thr	Lys	Glu	Ser	Arg	Glu	Ala	Val	Glu	Lys	Glu	Phe	Glu
1				5					10					15	
Pro	Leu	Leu	Asn	Trp	Met	Lys	Asp	Lys	Ala	Leu	Lys	Asp	Lys		
			20					25					30		

&lt;210&gt; 83

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic peptide

&lt;400&gt; 83

Met	Met	Pro	Lys	Tyr	Leu	Asn	Phe	Val
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<210> 84  
<211> 9  
<212> PRT  
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Lys Leu Tyr Val Arg Arg Val Phe Ile  
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Phe Leu Val Ala Asp Lys Val Ile Val  
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Val Leu Gly Leu Cys Cys Val Leu Leu  
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<210> 96  
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<212> PRT  
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<220>  
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<400> 96  
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<220>  
<223> Description of Artificial Sequence: Synthetic peptide

<400> 97  
Leu Glu Leu Asp Thr Ile Lys Asn Leu  
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<210> 98  
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<400> 98  
Phe Ile Thr Asp Asp Phe His Asp Met  
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<210> 99  
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<210> 100  
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<210> 102  
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<210> 103  
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<210> 104  
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 peptide motif

<400> 105  
 Gly Asp Ser Gly Gly  
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<210> 106  
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Tyr Gly Ile Ala Pro Val Gly  
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<210> 107  
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 <212> PRT  
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 peptide

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 1 5 10 15



Ser Ile Cys Phe Gln Met Thr  
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<210> 108  
<211> 23  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 108  
Leu Ser Gly Val Thr Gly Asn Leu Ala Ser Ala Ile Phe Leu Pro Tyr  
1 5 10 15

Arg Ala Glu Val Gly Pro Ala  
20

<210> 109  
<211> 23  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 109  
Trp Arg Ala Phe Phe Lys Leu Leu Ala Val Val Leu Phe Leu Phe Thr  
1 5 10 15

Phe Gly Leu Leu Pro Trp Ile  
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<210> 110  
<211> 22  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 110  
Ile Ser Gly Phe Ile Ser Gly Leu Phe Leu Ser Phe Ala Phe Leu Pro  
1 5 10 15

Tyr Ile Ser Phe Gly Lys  
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<210> 111

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
peptide

<400> 111

Gln	Ile	Ile	Ile	Phe	Gln	Val	Val	Phe	Leu	Gly	Leu	Leu	Ala	Gly	Leu
1				5				10					15		

Val	Val	Leu	Phe	Tyr	Val	Tyr
			20			